ABSTRACT

A method and system for assigning self-routing addresses to nodes in a network with arbitrary, including irregular, topology is provided. The method and system are useful in packet-switched networks and in particular optical packet-switched networks for reducing processing associated with routing packets. Each self-routing address encodes a set of paths from all nodes in the network to the destination node. In an embodiment of the invention each output port of each node in a network sends a packet in response to the state of a bit in the self-routing address in a packet. Alternatively, each node address in the network is mapped to a bit in a self-routing address. Furthermore, a node can have multiple self-routing addresses encoding different sets of paths from all other nodes in the network to the node. In addition, hierarchical networks are included among the networks suitable for self-routing addresses.